

What is claimed is:

1. A load drive circuit, comprising:

a drive switching element for switching on and off a load current that is provided between a load and a power source;

a gate drive circuit for on/off driving of the drive switching element;

an input circuit for detecting on operation of an external switch;

a protection circuit for switching, when the input circuit detects on operation of the switch, the gate drive circuit to be in an ON state and for controlling in accordance with an overcurrent status or an overheat status the gate drive circuit to protect the circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the gate drive circuit, the current blocking switching element being provided in at least any of a path between the gate drive circuit and the power source and a path between the gate drive circuit and a ground.

2. A load drive circuit, comprising:

a drive switching element for switching on and off a load current that is provided between a load and a power source;

a gate drive circuit for on/off driving of the drive switching element;

an input circuit for detecting on operation of an external switch;

a protection circuit for switching, when the input circuit detects on operation of the switch, the gate drive circuit to be in an ON state and for controlling in accordance with an overcurrent status or an overheat status the gate drive circuit to protect the circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the protection circuit, the current blocking switching element being provided in at least any of a path between the protection circuit and the power source and a path between the protection circuit and a ground.

3. The load drive circuit according to claim 1, further comprising:

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the protection circuit, the current blocking switching element being provided in at least any of a path between the protection circuit and the power source and a path between the protection circuit and a ground.

4. A load drive circuit, comprising:

a drive switching element for switching on and off a load

current that is provided between a load and a power source;

a gate drive circuit for on/off driving of the drive switching element;

an input circuit for detecting on operation of an external switch;

a protection circuit for switching, when the input circuit detects on operation of the switch, the gate drive circuit to be in an ON state and for controlling in accordance with an overcurrent status or an overheat status the gate drive circuit to protect the circuit;

an overcurrent detection circuit for detecting an overcurrent to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overcurrent detection circuit, the current blocking switching element being provided in at least any of a path between the overcurrent detection circuit and the power source and a path between the overcurrent detection circuit and a ground.

5. The load drive circuit according to claim 1, further comprising:

an overcurrent detection circuit for detecting an overcurrent to output a detection result to the protection

circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overcurrent detection circuit, the current blocking switching element being provided in at least any of a path between the overcurrent detection circuit and the power source and a path between the overcurrent detection circuit and a ground.

6. The load drive circuit according to claim 2, further comprising:

an overcurrent detection circuit for detecting an overcurrent to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overcurrent detection circuit, the current blocking switching element being provided in at least any of a path between the overcurrent detection circuit and the power source and a path between the overcurrent detection circuit and a ground.

7. The load drive circuit according to claim 3, further comprising:

an overcurrent detection circuit for detecting an

overcurrent to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overcurrent detection circuit, the current blocking switching element being provided in at least any of a path between the overcurrent detection circuit and the power source and a path between the overcurrent detection circuit and a ground.

8. A load drive circuit, comprising:

a drive switching element for switching on and off a load current that is provided between a load and a power source;

a gate drive circuit for on/off driving of the drive switching element;

an input circuit for detecting on operation of an external switch;

a protection circuit for switching, when the input circuit detects on operation of the switch, the gate drive circuit to be in an ON state and for controlling in accordance with an overcurrent status or an overheat status the gate drive circuit to protect the circuit;

an overheat detection circuit for detecting the overheat status to output the detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

9. The load drive circuit according to claim 1, further comprising:

an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit;
and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

10. The load drive circuit according to claim 2, further comprising:

an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit;
and

a current blocking switching element for blocking, when

a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

11. The load drive circuit according to claim 3, further comprising:

an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

12. The load drive circuit according to claim 4, further comprising:

an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF,

a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

13. The load drive circuit according to claim 5, further comprising:

an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

14. The load drive circuit according to claim 6, further comprising:

an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current

blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

15. The load drive circuit according to claim 7, further comprising:

- an overheat detection circuit for detecting the overheat status to output a detection result to the protection circuit;
- and

- a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the overheat detection circuit, the current blocking switching element being provided in at least any of a path between the overheat detection circuit and the power source and a path between the overheat detection circuit and a ground.

16. A load drive circuit, comprising:

- a drive switching element for switching on and off a load current that is provided between a load and a power source;

- a gate drive circuit for on/off driving of the drive switching element;

- an input circuit for detecting on operation of an external switch;

- a protection circuit for switching, when the input circuit detects on operation of the switch, the gate drive circuit to

be in an ON state and for controlling in accordance with an overcurrent status or an overheat status the gate drive circuit to protect the circuit;

a current limitation circuit for causing, when voltage decline between both ends of the drive switching element exceeds a predetermined threshold value, the both ends to have therebetween a short circuit to limit the current flowing to the drive switching element; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the current limitation circuit, the current blocking switching element being provided in at least any of a path between the current limitation circuit and the power source and a path on the output terminal side of the current limitation circuit.

17. The load drive circuit according to claim 1, further comprising:

a current limitation circuit for causing, when voltage decline between both ends of the drive switching element exceeds a predetermined threshold value, the both ends to have therebetween a short circuit to limit the current flowing to the drive switching element; and

a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF,

a current flowing to the current limitation circuit, the current blocking switching element being provided in at least any of a path between the current limitation circuit and the power source and a path on the output terminal side of the current limitation circuit.

18. A load drive circuit, comprising:

- a drive switching element for switching on and off a load current that is provided between a load and a power source;

- a plurality of control sections for drive controlling of the drive switching element while protecting the drive switching element from a predetermined abnormality status; and

- an input circuit for detecting on operation of an external switch;

- a current blocking switching element for blocking, when a signal inputted from the switch to the input circuit is OFF, a current flowing to the control sections, the current blocking switching element being provided in at least any of a path between at least one of the control sections and the power source and a path between at least one of the control sections and a ground.